

## APPENDIX A

## A PLAN FOR THE MERGER OF THE ASTIS AND BOREAL DATABASES

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This document describes a plan for merging the ASTIS and BOREAL databases. The description is sufficiently detailed to achieve two purposes. First, to demonstrate that such a merger is possible; that is, that the two institutes can agree on a database structure and set of database products which will meet the needs of both of their client groups. Second, to obtain a general estimate of the cost of a merger.

BACKGROUND INFORMATION

The Arctic Institute of North America (AINA) maintains the Arctic Science and Technology Information System (ASTIS) database. This database contains 21,200 records as of December 1987. (In addition to normal database growth, about 6000 records from an Indian and Northern Affairs Canada northern research project database will be added to ASTIS by March 1988.) ASTIS covers all aspects of the north including the earth sciences, the life sciences, engineering and technology, renewable and non-renewable resources, government, economic and social conditions, land use, native peoples, archaeology, history, art and literature. Geographic emphasis is on the Canadian Arctic, but approximately 25% of the records in the database are about other arctic regions. Not only is recent literature indexed and abstracted but descriptions of ongoing research projects are also included. About 80% of the documents referenced in ASTIS were published in 1978 or later.

ASTIS is not tied to a single library collection but rather has gathered information from many sources. References in the database include standard bibliographic citations to items such as books, theses, conference proceedings and government documents as well as periodical and monograph analytics. ASTIS includes full abstracts for most of the items in its database, as well as location codes indicating libraries which hold the document. The contents of the database are disseminated to customers through a variety of publications and services such as the ASTIS Current Awareness Bulletin, the ASTIS Bibliography, special bibliographies, and ASTIS Custom Searches. ASTIS is available online through QL Systems Ltd., an internationally accessible database vendor.

The Boreal Institute for Northern Studies (Boreal) maintains the BOREAL database which contains 36,068 records as of December 1987. Subject coverage in this database is similar to that of ASTIS. It covers all aspects of the north. The geographic scope of BOREAL is, however, somewhat broader. While its main focus is the western Canadian Arctic, over 55% of the material in the database extends to other arctic and cold regions such as Alaska, Scandinavia, and Greenland. Historical as well as current material is covered. Of the material in the database, approximately 60% was published in 1978 or later.

BOREAL database is backed by a single library collection. Nearly every item



listed in the database can be found in the Boreal Institute for Northern Studies Library and is easily accessible both to in-house users and through Interlibrary Loan. Types of references found in BOREAL are similar to those found in ASTIS except BOREAL does not include references to ongoing research projects. BOREAL references contain short annotations rather than abstracts. Publications and services derived from the database include the Library Bulletin, the BINS Bibliographic Series, and Special Bibliographies. The database is available for searching nationally on CAN/OLE.

The two databases have both been constructed using SPIRES (Stanford Public Information REtrieval System), a general-purpose database management system available through the University of Alberta's Department of Computing Services. Therefore staff at both Institutes are familiar with the same software system, and both databases are stored on the same computer. The record structures used by the two databases are, however, different in many respects. It is this difference in record structure that presents the greatest obstacle to a merger of the two databases.

Before the plan for merging the databases was devised, a literature search was conducted. While information relating to the establishment of merged databases can be found, little has been written on the merger of existing databases.

An examination of a local cooperative database project yielded the same problem. The cooperative project was initiated before any of the libraries had established online databases. The libraries involved did not have to deal with the problem of merging existing records and record structures.

In devising the structure of the merged database, existing standards, such as MARC, were considered and the structure of other arctic databases were examined. None were problem free. In the end it was decided to devise a system for merging the BOREAL and ASTIS databases on the basis of the data and data elements currently contained in the two databases together with a list of end products desired.

## MANAGEMENT

The merger of the ASTIS and BOREAL databases, and the resulting combined database, will be managed jointly by AINA and Boreal. A new name will be chosen for the database. Each Institute will be responsible for its own records within the merged database and will work independently when indexing/cataloguing. Certain tasks will be delegated to one or the other of the institutes as necessary. For example, a single point of contact for subscribers to the hardcopy products will be necessary to avoid confusion. Each institute will be responsible for generating any individual products (see below) that it requires.

The two institutes will jointly determine the subject and geographic scope of the database, and set objectives for the level of comprehensiveness to be achieved. These decisions will, of course, be strongly influenced by the available funding. The database will remain multi-disciplinary, and will emphasize the Canadian Arctic.



## COSTS AND FUNDING

### Of the Merger Project

Throughout this document labour is costed as follows:

Data Entry Operator - \$1500/mo.  
 Technician - \$2000/mo.  
 Indexer/Cataloguer - \$2500/mo.  
 Programmer - \$3500/mo.  
 Librarian/Manager - \$4000/mo.

These costs include 10% for benefits.

Computing cost estimates are based on experience.

Estimated costs of the merger project are as follows:

- Management: 2 people working half-time for 2 yrs., 24mo. x \$4000 = \$96,000. This management cost reflects the amount of time that existing management staff will spend organizing, supervising, problem-solving, etc. during the merger. While this cost may be paid out of existing core budgets, it represents other activities or projects that ASTIS and the Boreal Library will have to forego during the period of the merger.
- Systems analysis, programming, and documentation of new file definition and formats: 6mo. x \$3500 = \$21,000.
- Writing Indexer's Manual for new database: 2mo. x \$4000 = \$8000.
- General computing costs: \$25,000. Includes development and testing of new software, and the cost of adding records to the new database. Excludes cost of eliminating duplicate records and converting old records to the new format.
- Equipment: \$20,000. Cost of additional terminals and/or microcomputers for the new staff required for the merger. Additional microcomputers would reduce computing costs because records could be edited offline.
- Eliminating duplicate records (see details below): \$16,500.
- Record conversion (see details below): \$43,350.
- Adding subject/geographic indexing (see details below): \$162,500.
- TOTAL: \$392,350.

Most funding for the merger of the databases will have to come from outside sources.

### Of the Merged Database

Once the merger is complete each institute will be responsible for the costs of adding and updating its own records, producing its own in-house products and doing its own in-house searches. Each institute should use its own computing accounts for these functions.



Other costs will be shared. The database will be housed under a Boreal Institute computing account. This account will be used for all development and for the production of any joint products. Storage costs will also accrue under this account. All hard-dollar costs relating to this account will be evenly shared by the two institutes.

All costs relating to the production and distribution of joint products (such as staff time, postage, etc.) will also be shared evenly between the institutes. For example, human and computer costs of proofreading individual records as they are added to the database will be paid by the institute that adds them, but the costs of proofreading groups of records for consistency when preparing joint products will be shared by both institutes.

All revenues from the joint database will be evenly split.

The merged database should be somewhat less expensive to operate than were the two separate databases.

#### TIME SCHEDULE

It is expected that a merger of the ASTIS and BOREAL databases will take approximately two years to complete.

#### PRODUCTS

The following products need to be produced from the merged database:

##### Individual products - Boreal

Boreal's products will make extensive use of a structure which has Location as the key and which contains a record's library-dependent information.

- spine labels, book pocket labels and card labels. Format definitions for these labels will be the responsibility of the Boreal Library. Produced weekly.
- printed shelf list. Format to be determined by the Boreal Library but format definition will be done under the merged project. Printed product must be in call-number order. Produced on demand.
- online searching. Database must contain a transparent modifier which enables only Boreal Library records to be retrieved under designated CSID's.

##### Individual products - ASTIS

- printed list of citations only, sorted by record number, for those documents in the database that have location code ACU. Used by the University of Calgary Libraries for Interlibrary Loan verification. List of additions produced every second month, full listing reprinted annually.
- working/proof ASTIS subject and geographic indexes with document numbers. Produced every four months. Boreal has no equivalent product for UDC codes.





- thesaurus maintenance formats. Including formats for automatically building and checking cross-references, producing hierarchically organized lists, etc. Produced every four months.

- ASTIS subject and geographic thesauri for distribution to users. Produced approximately every two years. The equivalent Boreal product will continue to be produced from the separate BOREAL CODES database.

### Joint products

- record proof formats for cataloguers to use. These differ from the formats used for searching and include versions with and without warning and error messages. Produced continuously.

- working/proof indexes for cataloguers to use. Examples of these include series and corporate author indexes which will be used as authority files. Produced every four months.

- utility formats to catch errors and warnings that were reported in the record proof formats but not corrected, list possible duplicate documents in the database, and do statistics. Run annually.

- terminal searching formats. Used for online searching by both staff and patrons. Same formats can be used on both CRT and printing terminals. Format options needed: title and author; citation; citation and abstract; citation, abstract and tracings. Used continuously.

- formats for printing searches on laser printers through TEXTFORM. Same options as terminal searching formats. Used as needed.

- formats for Current Awareness Bulletin. The main body of this publication will be arranged by broad subject and it will contain broad geographic and author indexes. Produced monthly.

A cumulative bibliography will be a low priority product of the merged database. A decision about whether to produce a cumulative bibliography will not be made until after the merger has been completed. Such a bibliography could be a total, one-year or two-year cumulation, and could be produced on paper, microfiche or CD-ROM.

- formats for special bibliographies. A number of different options for the arrangement of the main body of the bibliography will be available, including author, broad subject, and special categories. (The current awareness bulletin will be a special case of the broad subject option.) The format of individual records within the bibliography will be identical to the format for printing searches (above). These bibliographies will include a variety of indexes, the type of indexes used being dependent on the arrangement of the main body. Used as needed.

- tapes for online vendors. May need different formats for each vendor. Update tapes monthly or bimonthly, and complete rebuilds of the database every few years.



## GENERAL CONSIDERATIONS

### Duplicate Records

A study undertaken by Ross Goodwin in June, 1987 indicated that approximately 31% of the records in ASTIS are in BOREAL. A study done a little later by Robin Minion indicated that approximately 16% of the records in BOREAL are in ASTIS. The difference between the two figures can largely be accounted for by the difference in the size of the two databases. At that time ASTIS contained 21,000 records and BOREAL 36,000. Therefore, if the databases are merged in the near future there would be approximately 6000 duplicate records. These duplicates must be removed in order to avoid user frustration, reduce storage charges, make the production of products less time-consuming, and keep the costs of searching the database low.

The removal of duplicate records can be done through computer matching. One database will be added to the new filedef first. As records from the other are added they will be checked for possible duplication. Only the title fields will be compared, ignoring differences in punctuation and case. Differences between the structure of the two title fields, such as ASTIS' use of translated titles, will be allowed for in the matching process. The matching process has been designed to keep the number of false matches low, thus minimizing the amount of human time required, at the price of allowing some duplicate records into the merged database.

Suspected duplicates will be rejected and manually examined. The number of records rejected will be higher than 6000 because many non-duplicate items will be rejected. These include different editions of the same publication, annual reports, and items which for other reasons have the same title but which are not the same. Although the number of records that will be rejected is extremely difficult to estimate, a rough guess is 7000 records. Those rejected records that are not really duplicates will be entered into the merged database. Those rejected records that are duplicates will have some of their elements moved to the corresponding record in the merged database. For example, if the ASTIS database is added last, abstracts will have to be moved, and if BOREAL is added last, call numbers will have to be moved. It is this last step that may be the most expensive part of the process of removing duplicates. The question of how much effort should be put into resolving discrepancies between the two versions of a record cannot be answered until the file definitions for the new database have been written and the exact nature of the discrepancies identified.

#### COSTS:

Programming of matching program and programs to move parts of records: 1 mo. x \$3500 = \$3500.

Computer costs, not including actual adding of records to merged database: \$5000.

Checking and editing of duplicate records by technician: 4 mo. (7000 records x 4 min. ea.) x \$2000 = \$8000.

Total: \$16,500.

### Subject and Geographic Indexing

A limited study was undertaken to determine whether an automated concordance between the Boreal Library's Universal Decimal Classification codes and ASTIS Subject Thesaurus terms was feasible. Robin Minion selected 610 random terms from the ASTIS Thesaurus and matched them against the alphabetic index of



BOREAL's version of UDC. Of the 610 terms, 79 or 13% were exact matches. The matching process was then reversed. 626 terms were randomly selected from BOREAL's version of UDC and matched against the ASTIS Thesaurus. Of the 626 terms, 100 or 16% were exact matches. In determining exact matches, punctuation was ignored and singular and plural forms of words were considered to be the same.

In an independent test, Ross Goodwin took 21 random ASTIS terms and checked to see if there was a UDC code which expressed the same idea. The test was then reversed and performed on 20 UDC codes. Comparing ideas rather than words resulted in better matching, 29% and 45% respectively, but the degree of matching was still too low to be useful.

It is clear from the results of this study that an automated concordance is not feasible. It would only be possible if both systems of indexing were extensively re-designed, a time-consuming and expensive process. Both systems currently have their own advantages which would be lost if this were attempted. Further study of the whole question of subject and geographic access needs to be done, particularly with regard to user's needs and preferences. The implications of either or both Institutes changing their current methods of providing access must be investigated.

Until such studies are undertaken, it has been agreed that the Boreal Library will continue to use UDC and AINA will continue to use ASTIS Thesaurus terms for the records they add to the merged database. ASTIS will undertake to add ASTIS Thesaurus terms to all records currently in the database as well as to all records the Boreal Library adds to the database. The Boreal Library will undertake to add UDC codes to all records currently in the database as well as to all records ASTIS adds to the database. New records will have priority. This addition of subject and geographic terms will be done without examining the actual document. While it is realized that this is not ideal and that some misapplication of terms will occur, at least one consistent indexing scheme on all records is necessary in order to make online searching easy and effective, and to produce subject and geographic indexes to any product which will be derived from the database.

The ASTIS broad subject and geographic codes will be used in the merged database. Both institutes will suggest possible improvements to these codes. Boreal will begin using these codes on new records that it adds to the merged database. ASTIS will add the codes to older Boreal records in the database.

#### COSTS:

- Adding UDC codes to ASTIS records: 28 mo. (21,000 records x 10 min. ea.) x \$2500 = \$70,000.
- Adding ASTIS subject and geographic terms and codes to BOREAL records: 37 mo. (30,000 records x 10 min. ea.) x \$2500 = \$92,500.
- Total: \$162,500.



ELEMENTS

Elements which currently appear in either BOREAL or ASTIS are listed below. The names and aliases of each element are followed by an indication of whether or not the element is to appear in the merged database. If it is to appear, the new element name and alias are given, together with a description of the content of the element and a discussion of any necessary modifications to the data contained in either BOREAL or ASTIS. Elements in the merged database may require additional aliases during a transition period following the merger.

In the merged database, the name of an element will always be a two-letter code.

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Title, Ti - BOREAL (required)

TI, Title - ASTIS (required)

TI, Title - MERGED (required)

The title proper, parallel titles, and other title information are transcribed according to AACR2. In BOREAL translations of the title appear in the note element and a Title-tracing (TTR) is used. ASTIS currently puts title translations in square brackets in the TI element. The BOREAL method will be used in the merged database.

**MODIFICATIONS:**

Search for ASTIS records with [] in the TI and move translated titles to both NO and TA (see below). When the information is duplicated in the NO element the phrase "Translated title: " should be inserted in front of it.

**COSTS:**

.25 mo x \$1500 = \$375.

Computing time = \$200.

**PERSONNEL:**

Data Entry Operator

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Title-tracing, TTR - Boreal (optional)

Not used - ASTIS

TA, Title-add-entry - MERGED (optional)

When the Boreal Library was using the database to produce catalogue cards for filing in the card catalogue, this element was normally used for producing the title added entry cards. Now it is primarily used to identify alternate titles such as cover titles and translated titles and allow them to be indexed in the title and keyword indexes.

Until about two years ago ASTIS had a similar title added entry element which was used for translated titles, parallel titles, cover titles, and sub-titles. It was judged to be not worth the effort since virtually all title access was through the online title keyword index, and these alternate titles were included in the title field and therefore the title and keyword indexes. ASTIS dropped





the title added entry element.

ASTIS provides translations of foreign language titles in the title element. As stated above (see TI) this practice will be discontinued and the translation will be placed in both the NO and TA elements.

Any information which appears in the TA element should also be duplicated in another element which is displayed, e.g. NO.

#### MODIFICATIONS:

See under TI above. Also, cover titles in ASTIS records could be found by scanning for the string "title" in the NO element, and then could be copied to the TA.

#### COSTS:

Those shown under TI above, plus .25 mo. x \$1500 = \$375.  
Computing costs: \$200.

#### PERSONNEL:

Data Entry Operator

.....

Print-title, PT - BOREAL (optional)

Not used - ASTIS

Not used - MERGED

The print-title was designed to be used in BOREAL for printing the title-added entry catalogue cards if the title tracing was too long to be used. Since the BOREAL Library's card catalogue was closed it is no longer necessary to print these cards. Therefore, this element will not be included in the merged database.

#### COSTS:

None

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Pers-author-str - BOREAL (optional)

AT, Author - ASTIS (optional)

AU, Author - MERGED (optional)

The Pers-author-str in the BOREAL database consists of three elements: Pers-author-name, Pers-prefix, Pers-suffix. (See the BOREAL Institute Library Systems Manual for a more detailed explanation of these elements). These elements are used to construct a statement of responsibility when a record is output. BOREAL's online personal author index is also constructed from the Pers-author-name using the special SPIRES personal name index facility. In determining the form of the name to use, BOREAL staff follow AACR2. The name is entered as it appears on the publication. No name authority files are used. Data is entered as Given names, Surname.



ASTIS uses one element for both personal and corporate authors. This element is used to construct online and printed author indexes as well as a statement of responsibility. In ASTIS, personal names are entered as Surname, Initials. No authority files are maintained for personal names. Names are sometimes followed by words in square brackets which indicate the relationship between the person and the work, i.e. [Editor], [Translator].

In the merged database, one author element will be used. This element will contain both personal and corporate authors. One online author index will be built. Names will be derived from the document in hand, and will be entered Surname, Given names. Many records will have just initials, since some documents only give initials, and the older ASTIS records will not be changed.

Names will be entered in the order in which they appear on the document. No authority files will be maintained for personal names. Words indicating the relationship between the person and the title of the work will follow the name and be enclosed in square ([]) brackets.

#### MODIFICATIONS:

A combination of computerized and manual procedures will be needed to reverse the parts of PAN to surname-first, and to extract information from PAP to go in []. PAS can usually be discarded.

#### COSTS:

Programming: 1 mo. x \$3500 = \$3500.

Computing: \$1000.

Manual checking and enhancement: 1 mo. x \$2000 = \$2000.

#### PERSONNEL:

Programmer

Technician

.....

Corp-author-str - BOREAL (optional)

AT, Author - ASTIS - MERGED (optional)

AU, Author - MERGED (optional)

The corp-author-str in the BOREAL database is very similar to the pers-author-str. It consists of three elements: Corp-author-name, Corp-prefix, Corp-suffix. These elements are currently used in the construction of the statement of responsibility and the corporate author index is built from the Corp-author-name. In determining the form of name to use, BOREAL staff have been loosely following Canadiana although there has been an agreement to start any corporate author name with the country or province, i.e. Canada. Parks Canada. No authority files are maintained.

As stated above, ASTIS uses one element for both the corporate and personal authors. This element is used in the construction of the author index. ASTIS follows Canadiana as closely as possible, and maintains a cross-referenced authority file as part of the online author index. Corporate author names are sometimes followed by words in square ([]) brackets which indicate the relationship between the corporate body and the title of the work, e.g.



[Sponsor].

As stated before, the merged database will have one element - AU - and one author index. There will not be separate personal and corporate author indexes. Canadiana will be followed as closely as possible. Relationships between the corporate body and the title of the work will be indicated by words enclosed in square ([]) brackets. The database itself will be used as an authority file when a body is not in Canadiana, but ASTIS will drop its cross-references.

#### MODIFICATIONS:

In BOREAL, the CAN element will be used as the AU element. The final punctuation should be removed from this element. No attempt will be made to correct the corporate authors in records currently housed in BOREAL so that they conform to Canadiana.

#### COSTS:

Programming: 1 mo. x \$3500 = \$3500.

Computing: \$1000.

Manual checking and enhancement: 1 mo. x \$2000 = \$2000.

#### PERSONNEL:

Programmer

Technician

.....

#### Statement of Responsibility

At present, neither BOREAL nor ASTIS has any separate statement of responsibility element. Within BOREAL, the statement of responsibility is constructed from the Pers-author-str or the Corp-author-str. Within ASTIS, the statement of responsibility is constructed from the AT element.

In printed products from the merged database, the statement of responsibility will be constructed from the AU element. Authors will appear in the order in which they were entered into the database which should conform to the order in which they appeared on the document.

If two or more authors are given, they will be separated by commas and the word 'and' will appear between the last two mentioned. If an author's name is followed by information in [], e.g. [Translator], the comma will appear after the information in [].

#### MODIFICATIONS:

Output formats will insert commas (,) and the word 'and'.

#### COSTS:

Included in general programming costs.

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Pers-tracing, PATR - BOREAL (optional)  
 Not used - ASTIS  
 AA, Author-add-entry - MERGED (optional)

This element together with the Corp-tracing is used in BOREAL to provide access to people or corporate bodies who are not authors of a work but who may be affiliated with a work, such as Chairmen of Royal Commissions. This element is indexed in the Author index and thus provides users with additional access points. Surnames are all capitals.

ASTIS no longer provides this access. No attempt should be made to add this information to old ASTIS records.

Keep this type of added entry element in the merged database.

MODIFICATIONS:

Change surnames to lower case in BOREAL records.

COSTS:

Programming, computing, and manual checking of a printed author index after the merger: \$3000.

PERSONNEL:

Programmer  
 Technician

.....  
 Corp-tracing, CATR - BOREAL (optional)  
 Not used - ASTIS  
 AA, Author-add-entry - MERGED (optional)

SEE Pers-tracing, PATR

MODIFICATIONS:

None

COSTS:

None

.....  
 CN, Conference Name - ASTIS (optional)  
 Not used - BOREAL  
 CF, Conference-name - MERGED (optional)

In ASTIS, this element is used with all document types. It includes the conference name, number, place, month, day and year. Although BOREAL does not use this element, there is a UDC code for conferences which includes the name, number and year of the conference. In the merged database, the CF should contain the name of the conference, number





and year only.

MODIFICATIONS:

The name, number and year of a conference should be copied from the UDC code in BOREAL records to a CF element.

CN element in ASTIS should be renamed CF. Old ASTIS data should not be changed.

COSTS:

Duplicating the name, number, and year of the conference from the UDC element (BOREAL) - Programming, Computing time: \$1000.

Renaming CN element (ASTIS): None.

PERSONNEL:

Programmer

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Pers-entry, PE - BOREAL (optional)

Does not exist - ASTIS

Do not include - MERGED

This element was used to print the personal author main entry in BOREAL formats. An alternate method for determining this main entry point will be used. Will be removed during merger.

COSTS:

None

.....

Corp-entry, CE - BOREAL (optional)

Does not exist - ASTIS

Do not include - MERGED

This element was used to print the corporate author main entry in BOREAL formats. An alternate method for determining this main entry point will be used. Will be removed during merger.

COSTS:

None

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Edition, ED - BOREAL (optional)

ED, Edition - ASTIS (optional)

ED, Edition - MERGED (optional)

In BOREAL, the edition statement is presently constructed according to AACR2. In ASTIS, the edition statement is constructed according to AACR2 for document-types M, MA and SA. The edition element for document type S contains the Numeric and/or Alphabetic ... Designation Area (NU) for a particular title,



e.g. No. 1 (May 1978)-.

In the merged database, the edition element should contain only that information prescribed by AACR2.

#### MODIFICATIONS:

Before merging the two databases, the ASTIS database should be scanned and all edition elements in document type S should be renamed NU (Numeric Designation...).

#### COSTS:

Identification and renaming of the edition statement in document type S (ASTIS)  
- Computing time: \$100.

#### PERSONNEL:

Programmer

.....

NU, Numeric-desig - MERGED (optional)

Not used - BOREAL

Not used - ASTIS

The Numeric designation is a new element. It will contain the Numeric and/or alphabetic, chronological or other designations related to the first issue of a serial as defined by AACR2. Punctuation and spacing as prescribed by AACR2 will be followed.

#### MODIFICATIONS:

In ASTIS, the NU element will be separated from the Edition element (described above). Punctuation in this new NU element will have to be altered so that it conforms to AACR2. This will involve manual changes to the data.

The BOREAL database does not at present contain this element. Each title will have to be manually examined and the relevant information added to the record. At present this involves about 600 titles.

#### COSTS:

Altering punctuation in ASTIS: .1 mo. (300 records x 2 min. ea.) x \$2000 = \$200.  
Adding information to BOREAL: .3 mo. (600 records x 3 min. ea.) x \$2000 = \$600.

#### PERSONNEL:

Technician

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Data-type, DT, Type - BOREAL (fixed)

DT, Document-type - ASTIS (fixed)

DT, Data-type - MERGED (fixed)



At present, BOREAL has 8 data types which are used both for statistical purposes (e.g. to determine how many items of each type are contained in the database) and to determine output format (e.g. whether monograph with author main entry or monograph with title main entry).

ASTIS has 5 document types which are used for error checking and statistical purposes only. The MERGED database will use 6 document types. These will include the 5 used by ASTIS plus one additional document type NM, Numbered Monograph, for monographs in a numbered (or un-numbered) series. This document type will include "items related to one another by the fact that each item bears, in addition to its own title proper, a collective title applying to the whole." One example is the CRREL Report series. The addition of this document type will provide better error-checking and more useful statistics.

The formats of the merged database will allow for the option of author or title main entry. These formats will not, however, be tied to document type. Instead, they will be determined by the presence or absence of Author elements.

#### MODIFICATIONS necessary:

Data-types in BOREAL will be altered automatically during the merger. The changes will be as follows:

DT=1	DT=M
DT=2	DT=S
DT=3	DT=SA
DT=4	DT=M
DT=5	DT=MA
DT=6	DT=S
DT=7	DT=SA
DT=8	DT=MA

The BOREAL database does not contain any items corresponding to the research project descriptions (dt=R) in ASTIS. ASTIS will be responsible for the format of this record type in the merged database.

In the past the Boreal Library has not catalogued numbered monographic series consistently and most of the present data types contain some records which would fall under the new definition. These records must be identified and altered later.

In ASTIS, numbered monographic series are currently catalogued as serial analytics (SA). It is easier to identify them in ASTIS than in BOREAL. They consist of those records within the SA document type that contain an imprint or collation element. It is easy to automatically identify these records and reassign their DT's.

#### COSTS:

Renaming data-type and changing codes (BOREAL) - None. This can be done by changing the outproc during the merger.

Identifying numbered monographic series within the serial analytic (SA) document type and redefining them as NM (ASTIS) - \$50 of computer time.

Assigning NM codes to those records that require them (BOREAL) - 1 mo. x \$2500 = \$2500.

Computing time = \$400.



## PERSONNEL:

Indexer/Cataloguer

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Imprint, IM - BOREAL (required)

IM, Imprint - ASTIS (optional)

IM, Imprint - MERGED (optional)

The information contained in the imprint element in both databases differs according to the data-type or document-type of the record. In BOREAL, Data-types 1,2,4 and 6 (monographs and periodical open entries) contain the Place and Publisher. Data-types 3,5,7 and 8 (monograph analytics and serial analytics) contain information relating to the 'larger work' in the imprint element. That is, they contain information relating to the monograph or serial from which the article or chapter, etc. was taken.

In the ASTIS database, monographs (M), numbered monographic series (some SA), and series (S) contain an imprint element. The imprint element in all of these cases contains the place of publication, publisher and year entered according to AACR2. The year is repeated in the YR element. (Monograph analytics (MA) and the rest of the records contained within the series analytic category (SA) contain larger work information in the series element and have no imprint element.) In defining the imprint element of the merged database, it was decided that consistency relating to the type of information in any one element was most important. Therefore, in the merged database, the imprint element will contain information relating to the place of publication and publisher. Place and publisher will be established according to AACR2. The year will be in a separate YR element which will be appended to the IM for display purposes.

## MODIFICATIONS:

In the merged database, ASTIS document-types S, M, and NM will use the imprint element. It is necessary to move year information and accompanying punctuation from the IM elements in these records to the YR element.

In BOREAL, no changes need to be made to the imprint element in data-types 1,2,4, and 6. Data-types 3,5,7 and 8 will be dealt with under Monograph source and Journal source.

## COSTS:

Removing the year information and accompanying punctuation from the imprint element in Document-types M, NM, and S. (ASTIS)

.5 mo. x \$3500 = \$1750.

.5 mo. x \$2000 = \$1000.

Computing time: \$200.

## PERSONNEL:

Programmer

Technician

.....





Date-published, Date, DP, PD - BOREAL (required)  
 YR, Year - ASTIS (optional)  
 YR, Year - MERGED (required)

Each record in the BOREAL database contains a Date-published element. Punctuation is included within the element. In ASTIS, Monographs (M), Monograph analytics (MA) and Series analytics (SA AND NM) all contain a year element. However, punctuation is not included. (Except for cases like "1981-83" or "196?" etc.)

#### MODIFICATIONS:

In ASTIS, punctuation should be added to these elements as follows:

M (Monographs): full stop (. or ?)  
 NM (Numbered monographic series): full stop (. or ?)

The document-type S (series) does not presently include a YR element. The year information from the imprint element should be removed, together with the appropriate punctuation, and placed in this element. This punctuation should either be a hyphen (-) if it is an open-entry or a full-stop (. or ?) if it is closed.

In BOREAL, the date information relating to periodical open entries (DT 2 and 6) has been entered incorrectly in the case of ceased titles. It has been entered as 1985-87, for example. This not only does not conform to AACR2 but also creates problems when indexing this information. This date information (approximately 200 records) must be altered.

#### COSTS:

Removing year information from imprint element and replacing YR element (ASTIS) - See under IM.

Adding appropriate punctuation to YR element in records without an IM (ASTIS) - Programmer, Computing time, Manual checking and enhancement: \$3000.

Altering date structure in Periodical Open Entries (BOREAL) - \$100.

#### PERSONNEL:

Programmer  
 Technician  
 Data Entry Operator

.....

Collation, Coll, C - BOREAL (optional)  
 CL, Collation - ASTIS (optional)  
 CL, Collation - Merged (optional)

In BOREAL, collation is currently used in data-types 1,3,4,5,7,8. It is not used with Periodical or Serial Open Entries (data-types 2,6). The information contained in the collation element varies with the data type.

In ASTIS, document types S, M and some SA (numbered monographic series NM)



contain a collation element which follows AACR2. The element is constructed as follows:

Pagination : Illustrative statement ; size

Document types MA and SA (exclusive of numbered monographic series) currently contain this information (except size) within the series element.

In the merged database, collation will be as follows:

M - Pagination : Illustrative statement ; size

NM - Pagination : Illustrative statement ; size

S - Pagination : Illustrative statement ; size

SA - collation information will be contained within the JS element

MA - collation information will be contained within the MS element

Structure of these elements, particularly the illustrative statement, should follow AACR2 whenever possible.

#### MODIFICATIONS:

Modifications relating to periodical analytics and monograph analytics are discussed under the elements Journal Source and Monograph Source.

One problem that remains is that BOREAL does not use a collation element for serials while ASTIS does. It will be necessary to check authority files and in some cases handle the original documents in order to add this element to the old BOREAL records. There currently are approximately 600 titles.

#### COSTS:

Cataloguing collation element for serials and adding information for the record (BOREAL): .5 mo. (600 records x 5 min. ea.) x \$2000 = \$1000.

#### PERSONNEL:

Technician

.....

Series, SE, S - BOREAL (optional)

SE, Series - ASTIS (optional)

SE, Series - MERGED (optional)

In BOREAL, the series statement is used in all data-types except 2 and 6 (Periodical open entries). The series statement can be multiply occurring. It is formed according to AACR2.

In ASTIS, the series statement is not used in document-type S (Series open entries). In document-types M (Monographs), and some SA (numbered monographic series NM) there is a series element which contains series information. However, it has not been formatted according to AACR2.

In document types MA and some SA (other than numbered monographic series) the series element contains information relating to the larger work and will be renamed MS or JS as discussed below.



In the merged database output formats will supply "(" before the element and ".)" after it.

#### MODIFICATIONS:

No changes are needed in BOREAL.

In ASTIS, the series element in document types M and some SA (NM) should be reformatted to: Series title ; no. #. The extra spaces that ASTIS puts in front of the # to ensure correct sorting in series indexes will be dropped.

#### COSTS:

Reformatting series element in ASTIS - Programmer and computing time: \$1000.  
Printing and proofing an SE index after the merger to catch problems and inconsistencies: \$2000.

#### PERSONNEL:

Programmer  
Indexer/Cataloguer

.....  
Series-tracing, SETR - BOREAL (optional)  
ST, Series-Added Entry - ASTIS (optional)  
Not used - MERGED

This element was used in BOREAL to produce series-added entry catalogue cards. These are no longer produced. The element has, in the past, been used to identify items for which cataloguing records are sent to SPRI (Scott Polar), HOC (Hochelaga), AEUB (National Library), MGL (McGill) and BACK (Backlog). It is also used to identify items for possible inclusion in a Bibliography of Northern Canada (BNC, BNCQ) or the Yukon Bibliography (YKB).

At present, only identifiers for AEUB, BACK, BNC, BNCQ, and YKB are needed. However, including them in the ST field is inappropriate. These identifiers should be moved to the BI field through scanning and renaming of the field tags. The rest of the identifiers can be removed from the database upon merger.

In ASTIS, the element is used to trace the highest level when documents have three bibliographic levels. It contains an exact copy of last part of the SE statement, in which information about the series or journal is recorded. Since printed series and journal indexes will not be produced from the merged database, it is no longer needed.

#### MODIFICATIONS:

In cases in BOREAL where the identifier BNC, BNCQ, YKB, AEUB or BACK has been used (approximately 12,500 records), the field tag will be changed to BI. All other occurrences of the element in the BOREAL database should be removed.

In ASTIS, all occurrences of this element will be removed at the time of merger of the two databases.



## COSTS:

Separating various uses of the Setr element in the BOREAL database, renaming some occurrences and removing all others - Technician, Computing time: \$400

Removal of ST element from ASTIS - None.

## PERSONNEL:

Technician

.....

## MS, Monograph-source - Merged (optional)

The merged database will contain a new element called MS (Monograph-source) which will be used in the document-type MA (Monograph analytics). It will contain information relating to the larger work in which the chapter, etc., is located.

This element will contain the following information:

Title of monograph / Statement of responsibility. - Edition. - Place :  
 Publisher, Year, Pagination, Illustrative statement. (Series statement)

The output formats will supply the word 'In:' which will appear before the element.

In merging the two databases, no attempt will be made to construct the monograph source element so that it is exactly identical to the layout given above. For example, BOREAL currently places author information before the title information. Since this element is not to be indexed and the amount of manual manipulation that would be required to alter this element would be large, it has been agreed not to attempt to standardize the information. However, any new records added to the database will follow the procedure listed above.

## MODIFICATIONS:

Currently BOREAL pieces together what will be the MS element from a number of different elements. For the two data-types for which the MS element is relevant (5 and 8), the author, title, place and publisher information is currently found in the imprint element. This element should be renamed, as previously mentioned. Date information is housed in the date element and a copy of this element should be appended after the publisher information. A copy of the date element should be used rather than moving the date element because a separate date element is still needed in order to construct a date index. The collation statement and, if available, the series statement should also be appended.

Within the ASTIS database, all information relating to the monograph source is entered into the series element in document-type MA. Therefore, the only change that is needed is to alter the alias of all series element within these records from SE to MS. The extra spaces that ASTIS puts in front of the pagination to ensure correct sorting will also be deleted.





## COSTS:

Copying and appending elements in BOREAL - Programmer, computing: \$600  
 Identifying and renaming aliases in ASTIS, and throw away extra blanks -  
 Computing: \$100.

## PERSONNEL:

Programmer  
 .....

## JS, Journal-source - MERGED (optional)

The merged database will also contain a new element called JS (Journal-source) which will be used in the document type SA (Series analytics). This does not include items defined as numbered monograph series. JS will contain information relating to the larger work in which the article, etc., is located.

This element will contain the following information:

Title of the periodical, volume number, issue number, month, year,  
 pagination, illustrative statement.

## MODIFICATIONS:

Again, in BOREAL, the information for this element will be pieced together from existing elements. The imprint element of data-types 3 and 7 should be renamed JS. A copy of the date element should be appended to the new JS element and then the data within the collation element for data-types 3 and 7 should be appended.

It is necessary to copy and not move the date element in order so that the date information is still available for building a date index from the DP element.

In ASTIS, if the numbered series have been reassigned to the document-type NM, then all that will be necessary is to change the alias of the SE element in the rest of the SA records from SE to JS. The extra spaces that ASTIS puts in front of vol., issue, and pagination to ensure correct sorting will be dropped.

## COSTS:

Renaming alias of the imprint element in data-types 3 and 7, copying the date element and appending the collation element (BOREAL) - Programmer, computing: \$600.

Renaming alias of the SE element in document-type SA from SE to JS (ASTIS) and throw away extra blanks: Computing: \$100.

## PERSONNEL:

Programmer  
 .....



ISBN - BOREAL (optional)  
 BN, ISBN - ASTIS (optional)  
 BN, ISBN - MERGED (optional)

Used for an item's International Standard Book Number.

MODIFICATIONS:

None

COSTS:

None

.....

ISSN - BOREAL (optional)  
 SN, ISSN - ASTIS (optional)  
 SN, ISSN - MERGED (optional)

Used for an item's International Standard Serial Number.

MODIFICATIONS:

None

COSTS:

None

.....

LC-card-number, LC - BOREAL (optional)  
 Not used - ASTIS  
 Not used - MERGED

MODIFICATIONS:

This element should be removed from the BOREAL database.

COSTS:

None

.....

Contents-note, Note, Con - BOREAL (optional)  
 NO, Note - ASTIS (optional)  
 NO, Note - MERGED (optional)

Both BOREAL and ASTIS use this element for notes about the contents and scope of an item. Boreal has also used this element for the annotation. Each occurrence of the contents-note element in BOREAL begins a new line in the output format and so this element was used to, for example, separate the parts of a work on output.



## MODIFICATIONS:

No modifications are needed in the ASTIS database.

In BOREAL, the data should be modified so that annotations are not included in this element. The contents-notes are not indexed. Records would likely have to be individually examined in order to identify these changes although some records may be identified by scanning for records with no annotation and long note elements or by scanning for records which have note elements which begin with Pt or Part. Records could also be examined and modified when ASTIS thesaurus terms are added.

## COSTS:

Modification of contents-note element (BOREAL) - Librarian (while adding Thesaurus terms), Computing time: \$1000.

.....

Annotation, AN - BOREAL (optional)  
 AB, Abstract - ASTIS (optional)  
 AB, Abstract, Annotation - MERGED (optional)

BOREAL uses the annotation element for a short description of the item. These are either written by a Librarian or derived from Scott Polar cards. An attempt is made to include terms which correspond to the UDC tracings applied to the item.

A more lengthy description of an item is contained in the abstract element in ASTIS. This element always contains English-language abstracts and is used if the document is written in either English or a foreign language other than French. The author's abstract is used if available.

BOREAL and ASTIS will use the same element for English language abstracts/annotations in the merged database. Each will continue to use the style of abstract/annotation that they have used in the past. Because of the division of work by form, monographs will therefore usually have short annotations, and journal analytics will usually have full abstracts.

## MODIFICATIONS:

None.

## COSTS:

None.

.....

AF, French-abstract - ASTIS (optional)  
 Not used - BOREAL  
 AF, French-abstract - MERGED (optional)

ASTIS uses this element for abstracts of some French-language documents. The abstracts in this element are written in French and derived from a number of sources.

BOREAL does not use this element. All abstracts in BOREAL are written in English and at present there are no plans to change this policy.



MODIFICATIONS:

None

COSTS:

None

.....

- AS, Abstract-source - ASTIS (optional)
- Not used - BOREAL
- AS, Abstract-source - MERGED

This element is used in ASTIS to indicate the source of the abstract used. Abstracts written by the author are always used if they are available. The abstract-source codes are checked upon input.

BOREAL does not presently use this element but it will be included in BOREAL records in the merged database. The National Library symbol for the BOREAL Institute Library (AEUB) will be used as the code. Although some abstracts are derived from SPRI, no attempt will be made to distinguish these abstracts in old records. SPRI abstracts used in the future will be coded SPRI.

MODIFICATIONS:

An AS element will need to be merged into all the records currently held in the BOREAL database. This can be done at the time that the two databases are merged.

COSTS:

None.

.....

- UDC-Tracing, UDC, UDCTR - Boreal (optional)
- Not used - ASTIS
- UD, UDC-Tracing - MERGED (optional)

This element contains the Universal Decimal Classification numbers used by the Boreal Library to provide subject access the collection. The schedule of classification numbers is produced from the BOREAL CODES database and is based on "Universal Decimal Classification for Use in Polar Libraries". The UDC tracings include both subject and geographic terms. Documents are indexed under the most specific terms applicable. The hierarchical nature of the scheme allows retrieval by broader terms. Multiple terms can be assigned to a document.

The Boreal Library will continue to use this scheme after the merger of the databases.

MODIFICATIONS AND COST: See "Subject Indexing" in the "GENERAL CONSIDERATIONS" section of this Appendix.

.....





SH, Subject-heading - ASTIS (optional)  
Not used - BOREAL  
ST, Subject-term - MERGED

Subject access to the ASTIS database is achieved through subject terms taken from the ASTIS Subject Thesaurus. Documents are indexed under the most specific terms applicable and are not automatically posted to broader terms. Multiple subject terms can be applied.

ASTIS will continue to use this scheme after the merger of the databases.

MODIFICATIONS AND COST: See "Subject Indexing" in the "GENERAL CONSIDERATIONS" section of this Appendix.

.....

GH, Geographic-heading - ASTIS (optional)  
Not used - BOREAL  
GT, Geographic-term - MERGED (optional)

The geographic terms are those found in the ASTIS Geographic Thesaurus. Documents are indexed under the most specific term applicable and are not automatically posted to the broader terms. Multiple geographic terms can be applied.

ASTIS will continue to use this scheme after the merger of the databases.

MODIFICATIONS AND COST: See "Subject Indexing" in the "GENERAL CONSIDERATIONS" section of this Appendix.

.....

BS, Broad-Subject - ASTIS (required)  
Not used - BOREAL  
SC, Subject-code - MERGED (required)

In the ASTIS database, 24 one letter codes corresponding to broad subject areas have been defined. The codes are used for producing the ASTIS Current Awareness Bulletin and bibliographies. They are also used for broad subject searching. Multiple codes can be assigned in the same element but order is important since the first code determines placement in the Current Awareness Bulletin.

In the merged database, this element will be added to all records, and will be used to produce a Current Awareness Bulletin and some bibliographies.

MODIFICATIONS AND COST: See "Subject Indexing" in the "GENERAL CONSIDERATIONS" section of this Appendix.

.....

Heading-Code, H, Heading - BOREAL (fixed)  
BG, Broad-Geographic - ASTIS (required)  
GC, Geographic-code - MERGED (required)

This element is used by BOREAL in formatting the Accessions List. ASTIS uses this element to produce a Broad Geographic Index to the Current Awareness



Bulletin and other publications, and for geographic searching of the database. It has been agreed that any 'accessions list/current awareness' type publication produced from the merged database will be arranged by subject and therefore the Heading-Code as used by BOREAL is no longer necessary. A common scheme for broad geographic searching would be advantageous. The heading-codes in the BOREAL database will therefore be altered to match those used in ASTIS. A general conversion scheme for BOREAL records could be:

AR	G02
AL	G06
CA	G08
CN	G081
CS	G082
GR	G10
SC	G13
SV	G13
SO	G14
MI	G16
EN	G16

These conversions will not always be correct because ASTIS contains specific codes for ocean areas while BOREAL does not. For example, ASTIS contains a code for the Bering and Chukchi Seas. BOREAL does not. The divisions for northern Canada are also more specific in ASTIS than in BOREAL. The automatic conversion will have to be followed by UDC-assisted manual examination of many of the BOREAL records. Examination of G081 should perhaps be postponed until the question of the division of the NWT is settled, since the codes for the NWT will have to be revised at that time anyway.

Alternatively, ASTIS could add GC's as it adds other subject and geographic indexing to BOREAL records. Cost might be about the same.

MODIFICATIONS AND COST: See "Subject Indexing" in the "GENERAL CONSIDERATIONS" section of this Appendix.

.....

LO, Location - ASTIS (optional)  
 Not used - BOREAL  
 LO, Location - MERGED (optional)

Currently included in the ASTIS database, this element indicates the location of the document. It is used primarily for Interlibrary Loan purposes. Codes used are the National Library symbols. Data is verified upon input.

This element should be merged into all BOREAL records. It can then also be used as a modifier for identifying only those records which are housed in the Boreal Institute Library and therefore those records available for automatic viewing under BOREAL's public CSID.

The BOREAL database also contains some references to items housed in the main University of Alberta Library Collection. These items can be identified by the call number 'University Library'. These records should have the National Library Code AEU attached.

LO will be the key of a structure which contains the following library-dependant



elements: CN, PH, LN.

MODIFICATIONS:

LO element should be merged into all BOREAL records. Symbol used should be AEUB or AEU.

COSTS:

Identification of BOREAL records with a 'University Library' call number. Addition of AEU code - Programmer, computing time: \$500.

.....

- CN, Call-number - BOREAL (required)
- Not used - ASTIS
- CN, Call-number - MERGED (optional)

This element is currently used by BOREAL to record the call number or shelf location of a document. Since ASTIS is not tied to a library collection, it has not, up to this point, utilized this element.

MODIFICATIONS:

In the merged database, information previously housed in the UC element in the ASTIS database will be included in this element.

COSTS:

None

.....

- UC, UC-Location - ASTIS (optional)
- Not used - BOREAL
- Not used - MERGED

Used by ASTIS to indicate the location of an item within the University of Calgary Library system. This element is aimed at University of Calgary users and occurs only when LO is ACU (University of Calgary).

This element is specific to the needs of ASTIS-University of Calgary users.

MODIFICATIONS:

In the merged database, this information will appear in the CN element. Therefore the alias of this element will be renamed CN at the time of merger of the databases.

COSTS:

None

.....



Per-Holdings, PH - BOREAL (optional)  
Not used - ASTIS  
PH, Per-holdings - MERGED (optional)

In BOREAL, this element is used to record the library's holdings of a given periodical title. Therefore, it is used for data-types 2 and 6 only.

Since ASTIS is not tied to a library collection, this element is not relevant.

MODIFICATIONS: None

COSTS:

None

.....

Accession-number, ACC - BOREAL (optional)  
Not used - ASTIS  
Not used - MERGED

In the past, this element was used to record an item's accession number in the BOREAL database. Material is no longer being accessioned and therefore this information does not need to be included in the merged file. Second copy information will be recorded in the LN field.

MODIFICATIONS:

Remove element from database upon merger.

COSTS:

None

.....

Order-number, O, order, order-no - BOREAL (required)  
Not used - ASTIS  
Not used - MERGED

Since this information is written inside the cover of each item received in the Boreal Library, it was decided that it did not have to be duplicated in the database.

MODIFICATIONS:

Remove element from database upon merger.

COSTS:

None

.....





LN, Library-note - MERGED (optional)

Not used - ASTIS

Not used - BOREAL

The Library-note is a new element which would be used when producing printed shelf lists. It contains any notes that refer to a particular library's copy of a document. Notes that would apply to any copy of a document go in NO. It would contain such information as the date of the last inventory, cost of an item, number of copies, etc.

MODIFICATIONS:

None

COSTS:

None.

.....

COST - BOREAL (optional)

Not used - ASTIS

Not used - MERGED

This element is used in BOREAL to record the list price of an item. It is not used in ASTIS. In a merged database, this information should appear in the Library note (LN).

MODIFICATIONS:

Renaming the alias of this element LN. This can be done at the time of merging the databases.

COSTS:

None.

.....

Acc-tracing, ACCTR - BOREAL (optional)

Not used - ASTIS

Not used - MERGED

Previously, this element was used in the BOREAL Library to produce accession cards. These cards are no longer produced. Instead, hand-written cards are used. This element does not need to be included in the merged database.

COSTS:

None

.....



Language-code, LA - BOREAL (optional)  
LA, Language - ASTIS (required)  
LA, Language - MERGED (required)

Although the Language-code element appears in the BOREAL file definition, it has never been used when cataloguing items. The language used in the text of document, if not English, is usually indicated in the annotation.

In the ASTIS database, the MARC codes for language are used and validated upon input. When output using a format, the full name of the language is used.

MODIFICATIONS:

The MARC language codes should be reviewed and extra codes added to the list to allow for the differentiation between, for example, Inuktitut syllabics and Inuktitut roman orthography. The language code should also become multiply occurring.

In ASTIS the codes "esk" and "mul" should be examined and altered to reflect the above changes.

The default code "eng" should be added to all BOREAL records. When adding subject and geographic indexing to BOREAL records ASTIS staff will watch for annotations mentioning that the work is not in English and alter the code.

COSTS:

Revision of MARC language codes and addition of Language-code to BOREAL records - \$4000.

Examination of Language-code on some ASTIS records - \$2000.

PERSONNEL:

Indexer/Cataloguer  
Technician

.....

Country-code, CO - BOREAL (optional)  
Not used - ASTIS  
Not used - MERGED

The BOREAL file definition contains a Country-code element. However, this element has never been used. The ASTIS file definition does not contain this element. Therefore, it seems reasonable that this element should not be included in the MERGED file definition because it's value appears to be limited.

MODIFICATIONS:

None

COSTS:

None



.....

CS, Citation-source - ASTIS (fixed)  
 Not used - BOREAL  
 CS, Citation-source - MERGED (fixed)

ASTIS currently uses the CS element to indicate the source of descriptive cataloguing. At present, if the source is not ASTIS, a note is generated indicating that the item was not seen. Codes are restricted and verified upon input.

MODIFICATIONS:

A CS element should be merged into all BOREAL records as the two databases are merged. The code used should be the National Library symbol for the BOREAL Institute Library - AEUB.  
 The formats should be changed so that if the cataloguing source is neither ASTIS or BOREAL, only then is a note generated indicating that the item was not seen.

COSTS:

None

.....

BI, Bibliographies - ASTIS (optional)  
 Not used - BOREAL  
 BI, Bibliography - MERGED (optional)

This element is used to indicate the ASTIS special bibliography or other bibliography in which a citation has appeared. For non-ASTIS bibliographies (e.g. Arctic Bibliography) the number of the citation in the bibliography is often given.

While BOREAL does not use this element, the BOREAL database presently utilizes the SETR element for a somewhat similar purpose. (SEE Series tracing). Some occurrences of the setr element in BOREAL will now be included in the BI element.

Also, in BOREAL, the citation number of an item in the Arctic Bibliography is noted in the annotation.

MODIFICATIONS:

No modifications are required to the BI element in ASTIS.

In BOREAL, some occurrences of the SETR element will be identified and renamed. (SEE Series tracing) Also, in BOREAL, the Arctic Bibliography citation number should be stripped from the annotation element and added to the BI element.

COSTS:

Identifying occurrences of the Arctic Bibliography number in the BOREAL database and adding them to the BI element - Technician, computing time: \$2000.



## PERSONNEL:

Technician

.....

NB, Temp-bib-no - ASTIS (optional)  
 Not used - BOREAL  
 NB, Temp-bib-no - MERGED (optional)

An element used temporarily by the programs that produce some types of ASTIS special bibliographies to store a record's sequence number within the bibliography.

## MODIFICATIONS:

None.

## COSTS:

None

.....

Date-entered, DE - BOREAL (fixed)  
 DA, Date-added - ASTIS (fixed)  
 DE, Date-entered - MERGED (fixed)

This element is used for statistical purposes, e.g. to identify the number of records added to the database during a specific time period, and has other potential uses.

## MODIFICATIONS:

None.

## COSTS:

None

.....

Date-updated, DU - BOREAL (fixed)  
 Does not occur - ASTIS  
 Do not include - MERGED

Not a very useful element since records are modified so frequently and for so many different reasons.

## MODIFICATIONS:

Remove during merger.

## COSTS:

None





.....

IN, Indexer - ASTIS (optional)  
Not used - BOREAL  
Not used - MERGED

ASTIS uses this element for the initials of the person responsible for indexing an item. This element will not be included in the merged database.

COSTS:

None

.....

DE, Data-entry-op - ASTIS (optional)  
Not used - BOREAL  
Not used - MERGED

ASTIS uses this element for the initials of the person who typed the item. This element will not be included in the merged database.

COSTS:

None

.....



ELEMENTS IN MERGED DATABASE

AA, Author-add-entry (optional)  
AB, Abstract, Annotation (optional)  
AF, French-abstract (optional)  
AS, Abstract-source (optional)  
AU, Author (optional)  
BI, Bibliography (optional)  
BN, ISBN (optional)  
CF, Conference-name (optional)  
CL, Collation (optional)  
CN, Call-number (optional)\*\*  
CS, Citation-source (fixed)  
DE, Date-entered (fixed)  
DT, Data-type (fixed)  
ED, Edition (optional)  
GC, Geographic-code (required)  
GT, Geographic-term (optional)  
IM, Imprint (optional)  
JS, Journal-source (optional)  
LA, Language (required)  
LN, Library-note (optional)\*\*  
LO, Location (optional)\*\*  
MS, Monograph-source (optional)  
NB, Temp-bib-no (optional)  
NO, Note (optional)  
NU, Numeric-desig (optional)  
PH, Per-holdings (optional)\*\*  
RE, (SPIRES slot record number)  
SC, Subject-code (required)  
SE, Series (optional)  
SN, ISSN (optional)  
ST, Subject-term (optional)  
TA, Title-add-entry (optional)  
TI, Title (required)  
UD, UDC-tracing (optional)  
YR, Year (required)

\*\* Indicates elements which will be part of a structure keyed on Location.



INDEXES

- G, Geographic Index - GC, GT (whole element, includes thesaurus?)
- S, Subject Index - SC, ST (whole element, includes thesaurus?)
- U, UDC Index - UD (break on punctuation)
- T, Title Index - TI, TR (keyword)
- K, Keyword Index - TI, TR, AB, AF, GT?, ST? (keyword)
- W?, Larger Work Index - MS, JS, SE (keyword, perhaps 3 separate indexes?)
- A, Author Index - AU, AA, CF (whole element)
- Y, Year Index - YR (keyword)
- L, Location Index - LO (whole element)









## SUMMARY - APPENDIX A

The merger of the ASTIS and BOREAL databases, and the resulting combined database, will be managed jointly by the Arctic Institute of North America (AINA) and the Boreal Institute for Northern Studies (Boreal). The database will remain multi-disciplinary and will emphasize, but not be restricted to, the Canadian Arctic. It will contain references to research projects as well as bibliographic data and will emphasize current material although historical material will also be included.

The total estimated cost of the merger is \$392,350. This does not include the cost of maintaining the database once merger has been completed. A general breakdown of costs follows:

- Management - \$96,000.
- Systems analysis, programming, etc. - \$21,000.
- Documentation (Indexer's Manual) - \$8,000.
- General computing costs including development and testing of new software - \$25,000.
- Equipment - \$20,000.
- Elimination of duplicate records - \$16,500.
- Record conversion - \$43,350.
- Subject/geographic indexing - \$162,500.

The total estimated cost of merger is based on the assumption that none of the existing resources of either Institute are to be utilized. Use of existing management staff would reduce the amount of outside funding needed to approximately \$300,000. Using existing indexing/cataloguing and clerical staff could reduce the needed outside funding to as little as \$100,000 if much of the normal operations of the two organizations were suspended for the period of the merger. The expertise needed to merge the databases does exist within the institutes.

Approximately 40% of the cost of merging the databases relates to subject/geographic indexing. Each institute uses a different indexing scheme. A limited study suggests that an automated concordance between the two schemes is not feasible. Agreement cannot be reached regarding the use of one scheme even though it is agreed that the use of two schemes represents not only a considerable duplication of effort but an added complication for the user. It is highly recommended, therefore, that a study of the question of geographic and subject access be undertaken before merging the two databases. Both user needs and preferences and the implications of either or both Institutes changing their current methods of access must be investigated.

All costs relating to the merger of the two databases, the production of joint products such as specialized bibliographies, and the continued storage and development of the merged database will be divided evenly between AINA and Boreal. All revenues from the joint database will be evenly shared. Once the merger is complete, however, each institute will be responsible for adding and updating its own records, producing its own in-house products and providing its own in-house search facilities.

It is estimated that the merger of BOREAL and ASTIS will take two years to complete.

A list of elements and indexes required in a merged database has been



constructed. Existing elements from the two databases were matched where possible, some elements from each database were deleted and other elements added. Changes required to existing data are outlined. In determining the structure of the merged database, communication and database standards as well as the structure of other arctic and non-arctic databases were examined.

The plan for merging the ASTIS and BOREAL databases achieves two purposes. It demonstrates that the two institutes can agree on a database structure and a set of products which will meet the needs of both of their client groups. It also provides a general cost estimate of the merger.







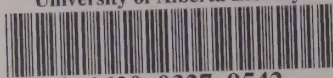
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Appendix A

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